

Femoral Neck Fractures in the Aged

PHILIP H. DICKINSON, M.D., San Diego

INTRACAPSULAR FRACTURE of the femoral neck even in vigorous adults is a serious problem to the orthopedic surgeon. In aged persons the problem is further complicated and there is no ready uniform solution. For light on the management of such cases and the results of treatment, the clinical records of 99 patients with fractures of the femoral neck, taken at random from the files of the San Diego County General Hospital, were reviewed. All the patients were indigent and aged. Seventy-eight were women, who had 80 fractures of the femoral neck, and 21 were men with 22 fractures, about evenly divided between the right and left side. The average age of the women was 79 years and of the men 78. The oldest patient was 97 at the time of fracture, and the youngest was 50. In the course of the study a few patients were brought back to the hospital for follow-up examination. The remainder were not seen by the author, the information being only that which could be obtained from x-ray films, from clinical records on file, from relatives, from nursing homes, and, occasionally, by telephone communication with the patients themselves. The longest follow-up was 20 years, the patient being a woman 80 years of age at the time of fracture, whose hip was fixed with bicycle spokes and who was seen again at the age of 100 with an intertrochanteric fracture of the opposite hip. The shortest follow-up was several hours in a patient who died shortly after admission. The average follow-up of patients surviving long enough for an end result to be achieved—that is, one year—was 30 months.

Morbidity and Cause of Death

Forty-six of the 95 patients available for analysis (4 patients having been lost to follow-up) were dead at the time the review was undertaken. Six of them died within two weeks of hospital admission, three of them without operation, as they were moribund on admission. The average age of these patients was 80 years, excluding one 68-year-old patient who died of a perforated ulcer. Twenty-one patients died between the first and the sixth month after admission, the average survival time being two months. For them, again, the average age was 80. Seven patients survived from six months to one year, and for them too the average age at the time of death was 80. Ten patients survived from one to five years and two

• Clinical data were reviewed on 99 patients with 102 fractures of the femoral neck on the Orthopedic Service of the San Diego County General Hospital. All were elderly. Twenty-one were dead within two month of the time the fracture was reduced and 36 within a year. In 14 cases the fracture was impacted or undisplaced; there was only one of these in which the fracture did not unite following treatment, and that was for iatrogenic reasons. Sixty-one per cent of the displaced fractures healed; only 32 per cent of the total number of patients with displaced femoral neck fractures walked again.

patients more than five years. One of them lived for 25 years with non-union of a femoral neck fracture for which surgical fixation had never been done. She died of carcinoma of the face. The average age of all patients who died was 80 and the average time following fracture was 15 months. Sixty per cent of the patients who died did so within two months after the fracture occurred. As would be expected in any group of this age, the causes of death were varied. The major causes of death were: (1) Heart disease (failure and coronary artery disease); (2) pneumonia; (3) cancer; (4) stroke; (5) leukemia; (6) diabetes; (7) cholecystitis; (8) shock; (9) infection; (10) cerebral arteriosclerosis; (11) ruptured ulcer; (12) generalized senility.

Patients Available for Analysis

Subtracting the four patients lost to follow-up, and the 34 who died before an end result could be obtained, there were 64 patients with fractures of the femoral neck available for analysis at an average time of 30 months following the fracture. However, 13 of the fractures were impacted or undisplaced, all of which went on to union with the exception of one in which failure to heal was iatrogenic. There were, then, 51 displaced intracapsular fractures for study.

Undisplaced Fractures

Undisplaced fractures amounted to 14 per cent of the present series, against 20 per cent in the series reported by Cleveland. Treatment of these fractures in this hospital is by internal fixation, and it is my belief that fixation with some form of threaded pin is the method of choice because nails may disimpact the fracture, with an occasional disastrous result, as happened in one of the cases in this series. Two

Submitted April 20, 1963.

of the patients with undisplaced fracture died; one of them, who was moribund at the time of entering the hospital, died six days after admittance, and the other died four years after admittance, without having had fixation. The latter patient had had a severe typhoid infection, for which she was put in the hospital, and the fracture healed without operation. In the previously mentioned iatrogenic non-union, placement of a Pugh nail displaced a previously impacted fracture, and eventual failure of fixation necessitated a prosthetic replacement. All the other fractures united without difficulty.

Displaced Femoral Neck Fractures

In 51 cases of displaced femoral neck fractures available for study, were 20 failures—13 for non-union and 7 from aseptic necrosis. These fractures were all treated by manipulation and closed reduction using a fracture table (Bell), and an internal fixation device. The joint was not opened to obtain reduction and fixation in most instances consisted of multiple threaded pins (Hagie or Knowles). However, every type of fixation device was utilized at one time or another in the series. It was necessary to open the hip fracture in only one instance to achieve satisfactory reduction, and this case was unsuccessful in that fixation failed and a prosthesis was utilized to salvage the hip. All operations were carried out by the Resident Staff in training at the San Diego County General Hospital. The average surgical time (from incision to closure) was 90 minutes. In the author's opinion if adequate reduction cannot be accomplished by closed methods, prosthetic replacement should be carried out, at least in patients as old as those in the present series. If the patients who died within a year after fracture—that is, before the result could be validly appraised—were considered to have had a bad result, the proportion of failures would be 64 per cent.

If ambulation is considered necessary for a successful result, then success was achieved in only 32 per cent of cases.

In many instances aged patients with femoral neck fracture are so senile, debilitated and ridden with degenerative disease that no treatment could offer hope of salvage. A fractured hip in such patients is simply a symptom of their general deterioration. Treatment in such cases should aim at making the patient as comfortable as possible and the nursing care as easy as possible. To this end prosthetic replacement may be of more value than attempted nailing. On review of the clinical charts and x-ray films many of the patients in this series were noted to have had intertrochanteric fractures as well as those of the femoral neck.

2330 First Avenue, San Diego 1.

REFERENCES

1. Cleveland, Mather: A critical survey of ten years experience with fractures of the neck of the femur, *Surg., Gynec. & Obst.*, 74:529-540, 1942.
2. Cleveland, Mather, and Bosworth, D. M.: Fractures of the neck of the femur, a critical analysis of 50 consecutive cases, *Surg., Gynec. & Obst.*, 66:646-656, 1938.
3. Cleveland, Mather, and Fielding, J. W.: A continuing end result study of intercapsular fractures of the neck of the femur, *J. Bone & Joint Surg.*, 36-AL 1020-1030, 1954.
4. Fisher, F. J., Hall, R. H., and Seibert, W. E.: Pre-operative and postoperative care of the aged patient with a fractured hip, *Surg. Clinics of No. Amer.*, 39:6, 1959.
5. Manpel, J., Marzulli, V., and Boley, S. J.: The fractured hip—a complication of aging, *Arch. Surg.*, 82:474-477, March 1961.
6. Montsch, P.: The end results in 250 cases of fractures of the neck and of the trochanter, *Wien. Med. Wchnschr.*, 101:505, 1951.
7. Schenck, W. G., Jr., Smith, R. G., and Stevens, J. G.: The fractured hip; a major surgical and sociological problem, *Am. J. Surg.*, 91:618, 1956.
8. Smith-Peterson, M. N., and VanGorder, G. W.: Intracapsular fractures of the neck of the femur; treatment by internal fixation, *Arch. Surg.*, 23:715-759, 1931.

